AN

ACCOUNT

OF THE

NAVIGABLE CANAL,

Proposed to be cut from the River CLYDE to the
River CARRON,

AS SURVEYED BY

ROBERT MACKELL and JAMES WATT.

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NAVIGABLE CANAL, &c.

THE making a Canal of Communication between *Clyde* and *Forth*, is not now a new Project. It is said to have been proposed so early as the Reign of *Charles* the Second; but what Steps were then taken towards it we have not been able to learn. In the Year 1723, a Survey was made, with that View, by Mr. *Gordon*; but as his Report, or Survey, was never published, we know nothing further about it, than that he said, the greatest Heighth was about one hundred and thirty Feet.

In the Year 1762, the Right Honourable Lord *Napier* employed Mr. *Robert Mackell*, assisted by Mr. *James Murray*, to make a Survey and Estimate of a Canal, leaving *Clyde* at *Yocker-Bridge*, about five Miles below *Glasgow*, and joining *Carron* at *Abbotshaugh*, about two Miles from the Place where the *Carron* discharges itself into the *Forth*: And his Lordship, at the same Time, collected from the best Authorities an Account of all the Goods that were carried from *Forth* to *Clyde*, and from *Clyde* to *Forth*, which he found to be about 8000 Tons *per Annum*.

In the Year 1763, the Honourable the Board of Trustees for encouraging Fisheries and Manufactures in *Scotland*, employed Mr. *John Smeaton*, F. R. S. to make a Survey of the same Track. He gave in his Report in *March* 1764, and it was printed in *March* 1767,

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from which it appears, that the Summit of the *Dolater Bog*, or higheſt Place, is 147 Feet above *Clyde* or *Forth*.

In *December* 1766, ſome Gentlemen, conſidering the Advantage that ſuch a Canal would be of to the Publick, but conſidering at the ſame Time, that the Expence of it, which was eſtimated by Mr. *Smeaton* at 80,000*l.* was ſo great, even without allowing for the Danger of its exceeding that Sum, that it would be impoſſible that any reaſonable Lock-Dues ſhould ever pay the Intereſt of the Money; and conſidering likewiſe, that by much the greateſt Part of the Goods carried by the Canal muſt come to *Glaſgow*, they employed Mr. *Mackell* to examine whether there might not be found ſome Track, which though it was higher, might be ſhorter, and which ſhould fall into the *Clyde* nearer *Glaſgow*. He accordingly found a Poſſibility of conducting a Canal, for the greateſt Part, in another Track, the higheſt Place of which ſhould be the *Biſhop-Loch*, or Lake, which is elevated above *Clyde* 240 Feet, and affords a conſiderable Supply of Water. This Canal would fall into *Clyde* at *Glaſgow*, and would be about two Miles ſhorter than the other Canal, from *Yocker* to *Abbotſhaugh*, and would conſequently be ſeven Miles ſhorter in Effect for the Trade of *Glaſgow*. It would alſo have the Advantage of paſſing through a Country filled with Pit-Coal, which might afford a conſiderable Trade on the Canal. Yet as from the great Heighth of this Track, and the Hardneſs of the Rocks through which it paſſes in ſome Places, which are moſtly of the Whin or Granite Kind, the Expence would be great, they deſired Mr. *Mackell* to examine whether or not a Canal, carried for the moſt Part in the Track he had formerly ſurveyed, could be brought into *Clyde* at *Glaſgow*. He accordingly found that a Canal, in the old Track, inſtead of going on in a ſtraight Line to the *Clyde*, might turn off at a Right Angle, near a Place called *Killermont*, and be conducted from thence through ſome uneven Grounds to *Glaſgow*, and that the Diſtance by this Canal, from *Glaſgow* to *Carron*, would be twenty-eight Miles and a Half.

In order to leſſen the Expence, they propoſed to make the Canal only eighteen Feet wide and three Feet deep; the Locks to be eighty Feet long and nine Feet wide, and the Riſe or Fall of each to be ſix Feet. They propoſed to make the Boats ſeventy Feet long, ſix Feet wide in the Inſide, and drawing twenty-ſeven Inches Water, which

Boats

Boats fhould carry about twenty Tons, and might be drawn by one Horfe.

If a Canal was to be made with Locks eighteen Feet wide, according to Mr. *Smeaton's* Plan, the Danger of wanting Water would oblige them to have only a Fall of four Feet, in which Cafe there would be feventy-two Locks, but if they have a Fall of fix Feet, there will be only forty-eight: And although the Fall in the narrow Locks be greater, and the Locks longer, yet they will not ufe fo much Water; for Mr. *Smeaton's* Lock will contain 4608 Cubic Feet of Water, and the narrow Lock will contain only 4320 Feet. It is true the large Lock will admit a Veffel of forty Tons, the fmall one a Veffel of twenty Tons only: But Veffels of forty Tons are little ufed for navigating on either the *Clyde* or *Forth*, and there is little Doubt but the greateft Part of the Navigation would be carried on by Veffels of twenty Tons Burthen, or under. The making the Canal capable of carrying Veffels of forty Tons is therefore unneceffary. It is objected, that Boats of the Shape propofed could not navigate on either *Forth* or *Clyde*, and that the Goods would require to be tranfhipped at entering and leaving the Canal: But by erecting proper Cranes, they might be tranfhipped for Three-Pence *per* Ton, or five Shillings on a Boat of twenty Tons. Now if each Lock detain the Boat ten Minutes, which they will on an Average, it appears the Boat will be four Hours longer of paffing the great Canal than the fmall one. Let us then examine how this will affect the Expence. Suppofe the Boat to be drawn three Miles *per* Hour, and the Diftance to be twenty-nine Miles, with forty-eight Locks, fhe would be feventeen Hours twenty Minutes in her Paffage: But if the Number of Locks were feventy-two, fhe would be twenty-one Hours twenty Minutes. Now if the Freight is a Half-penny *per* Ton *per* Mile, twenty-nine Miles would be 1*s.* 2½*d. per* Ton, or 1*l.* 4*s.* 2*d.* for twenty Tons. If a Boat in feventeen Hours twenty Minutes, gains 1*l.* 4*s.* 2*d.* in twenty-one Hours twenty Minutes fhe ought to gain 1*l.* 9*s.* 8*d.*

But effectually to remove all Objections, the prefent Undertakers propofe to make the Canal four Feet deep and twenty-four Feet wide; the Locks ten Feet wide and fixty Feet long, which will admit Boats of fifty Feet long, nine Feet wide, drawing three Feet

Water,

Water, and which will carry twenty Tons, and can navigate on either *Clyde* or *Forth*.

A Description of the Country from Glasgow *to the* Carron.

Glasgow is situated on the North Side of the River *Clyde*, mostly on a Plain, though some Part of it is on a rising Ground, the greatest Heighth of which is about one hundred and fifty feet above the River.

On the North and North-west Sides of the Town are small Hills, which are separated by Vallies.

About two Miles lower down the River, is the Mouth of the River *Kelvin*, which comes from the North. Its Channel is for four Miles very crooked, with steep rocky Banks. In Winter it is a pretty large River, but in Summer becomes almost dry; which is owing to the great Steepness of the Grounds from which it derives its Supplies of Water, joined to the Shallowness of the Soil in most Places, insomuch that when Rains fall, they are not retained in the Ground, but immediately run off.

From this Place which is called *Garscube* Bridge, the *Kelvin* runs almost due East, in a wide Hollow, with sloping Banks, till it is joined by another River called *Allander*. The Hollow now increases in Width considerably, and forms a fine Plain with sloping Banks, which continues varying in its Breadth to *Inchbelly* Bridge, where a narrow gravelly Ridge runs out from the North Side, till it almost meets the South Bank. After passing this Place the Plain becomes wider than before, and is remarkably level.

About two Miles further on, it is again contracted by steep rocky Banks on both Sides, to about a Furlong in Breadth. This Place is called *Auchinsterrie* Bridge. It then becomes a little wider, but is again contracted at *Craig Marloch* Wood; after which it widens to three Quarters of a Mile in Breadth, having steep Banks on both Sides. This Place is called the *Dolater Bogg*, which is the Summit or highest Place of the Valley, and the Source of the Rivers of *Kelvin* and *Bo ny*. The last of these runs East to *Woodneuk* near *Redburn* Bridge,

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where the Plain is again contracted, and makes two sudden Turns. The Brook called *Redburn* joins it here. The River *Bonny* now runs North-east to its Junction with *Carron* at *Dunipace*. The Hollow in which it runs is irregular, having on both Sides rising Grounds. Those on the South Side keep parallel to it as far as *Bonny* Bridge, from whence they proceed East to *Falkirk* (along the Side of these Banks is the Course of the proposed Canal.) From *Falkirk* the Ground falls pretty suddenly towards the North into the fine Plain called the *Kerse* of *Falkirk*, through which the *Carron* runs in a crooked Channel, and is navigable for large Vessels up to *Carron* Shore, where there is at present twelve Feet Water at full Sea. Messieurs *Garbett*, *Gascoigne* and Company, about two Years ago, made a navigable Cut, which shortened the River half a Mile. They are at present making another Cut which will shorten it as much; there might still be made another Cut, nearer the Mouth of *Carron*, that would greatly shorten the River, and tend to make it deeper; for at the Mouth of *Carron* there is in Spring Tides upwards of twenty-two Feet of Water; and if the River was made more straight, it would soon run itself deeper.

The Course of the Canal by the North Track.

The steep rocky Banks of the *Kelvin*, and the Mills that are erected on it, render the conducting a Canal up its Channel to *Garscube* Bridge impracticable; and were it possible, the Canal must join *Clyde* two Miles from *Glasgow*, which would be an Inconvenience, as five-sixths of the Goods must be carried to that City. It is therefore necessary for it to come into the Track of *Kelvin* above *Garscube*; but the Unevenness of the Ground from *Glasgow* to that Place will occasion the making of the Canal very crooked.

Leaving *Clyde* a little below the *Broomylaw* or Quay of *Glasgow*, the Canal may be cut through some tolerably level Ground, till it comes to the Foot of *Blythswood Hill*. The Ascent here is very sudden to Mr. *Napier*'s House, which stands seventy Feet above the River. It now rises more gently to the West End of *Blythswood Hill*, which is elevated twenty Feet more. It passes through *Blythswood* inclosed Fields, turning easterly till it comes near the Highway to *Garscube* at a Place where is a deep narrow Hollow which it must cross. The Ground is here 120 Feet above *Clyde*.

Near this Place is a narrow Gap in a Hill, through which the present Highway passes, and which must also be the Course of the

Canal,

Canal, and muft be cut nine or ten Feet deep, partly in Free-ftone Rock. It muft be obferved, that the Free-ftone in this Country is all of the grit or grinding Kind, and hereabouts very hard. Having paffed this Gap, the Canal may be carried by the End of the Avenue of Mr. *Dunmore*'s Houfe of *Bankhead* to a Farm Houfe called the *Gurroch*, where it will be neceffary to cut eight Feet deep partly in Stone. Then croffing a deep Hollow it will pafs by the Garden of Mr. *Graham* at *Gairbread*, and round a fteep Bank on the Side of the *Kelvin*: There will be here a good deal of extra Work. It will then proceed thro' fome Inclofures, and over a Hollow to a Place called the *Gairbreadneck*, which is a Summit having a fteep Bank towards the Weft, and towards the River *Kelwin*, and floping towards the Eaft into a Hollow that turns round and meets the *Kelvin* oppofite to *Killermont*. This Neck is 143 Feet above *Clyde*, and twenty-three above our Canal, which Heighth muft be cut. The Stone which comes to the Surface is a Millftone Gritt. As the cutting of this Neck will be very expenfive, it may be found proper to leave *Clyde* nearer *Glafgow*, to pafs by the Eaft End of *Blythfwood Hill* near the Village of *Cowcaddens*, and to keep on the Eaft Side of the Highway near *Youngfield*; then banking fome Hollows, to go, ftill on the Eaft Side of the Road, through the Gap formerly mentioned, at fuch a Height as will require no cutting; from thence through the Lands of *Rough-hill*, banking fome Hollows, and paffing along with the Highway through another Gap in a Hill about a Quarter of a Mile Eaft of Mr. *Graham*'s Houfe, where there will be fome cutting. It comes again to the *Gairbreadneck*, but being higher there will now be little cutting: But in order to crofs the Hollow that goes to *Killermont*, it will be neceffary either to bank the Canal very high, or to make a great Circuit round it.

The great Inequality of the Soil, which has often in the Space of a Mile fifty different Kinds of Stones, Tills, &c. joined to the Unevennefs of the Surface, render the fixing pofitively the Track of this Part of the Canal within five hundred Yards very difficult; but the two Lines in their greateft Diftance do not differ half a Mile.

Having paft the Hollow and arrived on the South Bank of the *Kelvin* oppofite to *Killermont*, the Canal proceeds eafterly along the Banks, (which are floping and covered with Earth) through the Inclofures of Mr. *Stirling* of *Keir*, and paffes near his Houfe of *Calder*; then goes near *Calderbridge* through tolerably level Grounds to *Kirkinhilloch*, from thence nearly in a ftraight Line to *Inchbelly* Bridge.

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The gravelly Neck at the North End of this Bridge is intended to be cut through, in order to afford a more free Paffage for the *Kelvin*, which after great Rains often overflows the eaftern Plain, and renders it dead Water to *Auchinfterrie* Bridge. When this happens it is fix or feven Feet above the ordinary Surface, and might endanger the Banks of the Canal, which now goes through the fine Plain formerly mentioned, paffes on the South Side of *Auchinvole* Houfe and *Auchinfterrie* Bridge, to the Point of Partition of the Rivers of *Kelvin* and *Bonny*. It will be neceffary to cut the Canal feven Feet deep through this Bog, not only to leffen the Lockage, but in order to get Earth to bank the Refervoir. The Canal is now carried on a Level to *Redburn*, which is croffed on an aqueduct Bridge. The Bank on which the Canal goes is here very fteep and irregular, the Soil not very deep, and interfperfed with large loofe granite Stones. The Canal now goes on towards *Seabeg* Wood, and from thence to *Bonny* Mill. The Free-ftone Rock is here near the Surface, which with other Inequalities will occafion a confiderable extra Expence. The Canal is here near the *Roman Wall*, called *Graham's Dyke*. It croffes the Hollow at *Bonny* Mill by a fmall Arch and great Bank; and can then proceed on a Level to *Camelon* croffing feveral Hollows. It now begins to defcend; and from *Camelon* to *Mungul*, which is not more than a Mile, the Defcent is one hundred Feet. The Ground is here very favourable for the Locks, being free of Stones and of a good Depth. There is a very fine Free-ftone Quarry belonging to Lord *Errol* at the Foot of *Falkirk* Moor, not more than a Mile diftant from this Place, and of a proper Quality for building the Locks. The Canal now defcends by a gentle Fall from *Mungul* to *Carron* oppofite *Carron* Shore, and there falls into the River.

The Courfe of the Canal by the South Track.

The Canal leaves *Clyde* at the *Broomylaw* or Quay of *Glafgow*, going parallel to the River, and paffing under one of the Arches of the Bridge till it meets the Brook called the *Town-Burn* near the Slaughter-houfe, and then going on through the Green of *Glafgow*, which rifes gently to the Eaft End, where it muft crofs *Camlachie Burn* on a Bridge. It then proceeds North-Eaft to Mr. *Alexander*'s Houfe of *Crown Point*, paffing through his Garden, and to the South of *Barrowfield* Miln it turns to the North; then croffing the Highway to *Edinburgh*, and going round the North Side of *Camlachie Dam*; it goes through a Valley due Eaft, till it comes to *Shutlefton* Fire-Engine: It is at this Place elevated about Seventy Feet above *Clyde*, and

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is diftant Four Miles from *Glafgow*. The Soil from *Glafgow* to this Place is good Earth, pretty deep. Keeping the rifing Ground on the North Side of *Shuttlefton Burn*, and paffing fome confiderable Hollows that will require banking, the Canal comes to *Wellhoufe*, where the Ground rifes very fuddenly and is very unequal. Still rifing, it paffes round the Side of a Hill, clofe to a Houfe called *Wefterhoufe*. The Ground from *Shuttlefton* to this Place is Earth, but from the Shape of the Country is probably of no great Depth. From *Wefterhoufe*, going round the Hill, the Canal arrives at a narrow Paffage through a Ridge of Rocks, the Ground being here on a Level with the Water in the *Bifhop Loch*, and elevated about 240 Feet above *Clyde*. Turning to the Eaft, it meets a Mofs or Peat Bogg of one Mile in length, and elevated in the Middle Sixteen Feet above the Surface of the *Loch*. At the End of this Mofs is the *Bifhop Loch*, which is a Piece of Water One Mile in length and 220 Yards in width, and at an Average four and a half Feet deep, having on the North and South Sides rifing Grounds covered with Earth, probably not very deep, below which is *Whin* or *Granite* Rock very hard. At the Eaft End is a Plain, where the Loch difcharges its Water. As this Loch is intended to be ufed as a Refervoir, it is imagined the moft eligible Method of paffing it, will be by cutting through the Mofs at the Weft End, as far as the North-Weft Corner, and from thence along the North Side of the *Loch* as far as the Place where it difcharges itfelf at the Eaft End. The whole of this Part of the Canal being Two Miles and a Quarter long, muft be cut fo deep as that the Surface of the Canal may be on a Level with the Bottom of the *Loch*, by which Means the whole of its Water may at any Time be drawn off into the Canal. It then follows the Courfe of the Brook called *Burthland Burn*, which iffues from the *Bifhop Loch*. This Brook winds through a crooked Valley to a Village called *Garnqueen*; a little below which we find a Hollow which comes from the Eaft, rifing gently to a Summit, eftimated about Fourteen Feet above the Level of the Canal, which is probably *Whin Rock*, and which muft be cut. The Canal then paffes through a Mofs to a narrow Paffage with an earthy Bottom between two Hills. At the End of this, turning to the North, it comes to a Place called *Annat Hill*. Going ftill on, the Canal muft crofs a Dyke or Ridge of *Whin Rock*, about 120 Yards in thicknefs, and in the higheft Place eftimated twenty Feet high. *Annat Hill Burn* runs with an irregular Courfe through this Ridge, turning to the Weft, but the Canal muft turn to the Eaft, and therefore will receive little Advantage from the Track of this Brook. Proceeding Eafterly its Courfe is round the North Side of a Hill oppofite to *Dalfhangie Wood*, between which Hill

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and Wood the River *Logie* runs. From this Hill, the Canal paſſes over the River *Logie*, and the Plain in which it runs, upon an aqueduct Bridge of conſiderable Heighth, till it meets a riſing Ground on the North-Eaſt Side of the Plain. Following this Courſe Eaſt, it meets a narrow Hollow betwixt Rocks, winding a little to the North ; this Hollow it muſt croſs on a Bridge. Turning again to the Eaſt, it paſſes through a Moſs in a ſtraight Line, till it arrives at the Summit of *Cumbernauld* Valley, which may be about Ten Feet above the Level of the Canal, and muſt be cut. Making here a ſmall Bending, it goes on to *Cumbernauld* Flax Mill, where is the Junction of *Red Burn* with *Cumbernauld Burn*, and then follows the Courſe of their Channel, which ſtill continues crooked, with very ſteep Banks, full of large looſe Stones. Making a large Circuit round the Weſt Bank of the Brook at this Place remarkably ſteep, it arrives at *Caſtle Cary*, a little below which it croſſes *Redburn* on an aqueduct Bridge, and proceeds by *Seabegs* Wood as in the other Track.

It remains now to give an Account of the Water with which the Canal is to be ſupplied. It has been mentioned that in the *Dolater* Bogg are the Sources of the Rivers of *Kelvin* and *Bonny*. They are indeed at that Place, Streams of no great Magnitude, but *Kelvin* is ſoon joined by *Shawend Burn*, and the *Bonny* by *Auchinclough Burn*, both of which are conſiderable Streams. *Kilſyth Burn* alſo falls into *Kelvin*, but is not ſo conſtant a Stream as the other two. At *Kirkintilloch* the *Logie* falls into the *Kelvin*, and might be brought into the Canal of Partition. This is a very conſiderable and conſtant Stream, as ſhall be more fully ſhewn. In the *Dolater* Bogg where the Ground is of little Value, there may be made a Reſervoir, which at Six Feet deep, would contain 775,800 Tons. The *Biſhop Loch* alſo, by making a Bank and Sluice to let off the Water, may be uſed as a Reſervoir. It contains 497,720 Tons. There are near it *Garnqueen* and *Johnſon* Locks, which by being treated in the ſame Manner, would afford conſiderable Supplies. Although there is little Doubt but theſe Reſervoirs would be filled in rainy Winters, and would of themſelves afford ſufficient Supplies in Summer without depriving the Mills of any of their Water, yet as very dry Seaſons may happen, in which they might not be filled, and other Accidents might occur, it will be neceſſary to conſtruct other Reſervoirs in proper Places : It will alſo be proper, in order to ſupply the Mills on *Kelvin*, to turn into it a Part of the River *Blain*, which riſes in the hilly Grounds on the North of the *Kelvin*, and at preſent falls into the River *Enrick*.

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It may alfo be proper to turn into *Carron* the Brook called *Earlſburn*, which alfo falls into the *Enrick*. By Means of theſe Brooks and the Reſervoirs, there will always be ſufficient Water for the Canal, and the Mills will loſe nothing.

One of theſe propoſed Locks being Sixty Feet long, Ten Feet wide, and Six Feet Fall, will require 3,600 Cubic Feet, or Ninety Tons of Water to fill it. Now ſuppoſe Twelve Boats to paſs the Point of Partition every Day (which would carry ten Times the Goods that are now carried by Land between the Eaſt and Weſt Seas) each Boat would require two Lockfulls of Water, one at coming in and another at going out of the Canal of Partition, this would be Twenty-four Lockfulls *per* Day, or 2,160 Tons. Now allow Leakage, Evaporation, and other Loſſes of Water to be 1000 Tons *per* Day, the Conſumption will be 3,160 Tons *per* Day. The two Reſervoirs above deſcribed, contain 1,273,520 Tons, which would ſupply the Canal for 400 Days. If it ſhould be found proper to bring the Canal by the South Track, the only Water that could be had would be the Runs from the *Biſhop*, *Garnqueen* and *Johnſon*'s *Lochs*, which are on an Average 11,000 Tons *per* Day, and would be more than ſufficient for the Canal ; and the Water thereby kept from the Mills might be ſupplied by the Reſervoir in the *Dolater* Bogg, and the Brooks in the other Track.

An Eſtimate of the Expence of the Canal by the North Track.

	l.	*s.*	*d.*
To cutting a Canal twenty-nine Miles long, twenty-four Feet wide, and five and one-half Feet mean Depth in the Yard running fourteen Yards, in a Mile 24,640 Yards, at 4 *d.* 410 *l.* 13 *s.* 4 *d. per* Mile,	11,919	6	8
To forty-eight Locks of ſix Feet Fall, at 200 *l.* each, -	9,600	0	0
To Ground for the Canal, twenty-nine Miles long and twenty-four Yards broad, being One-half of *Smeaton*'s Allowance, in all 210¼ *Scotch* Acres, at 20 *l.*	4,385	0	0
To making twenty-nine Miles of Track Road, at 40 *l.*	1,160	0	0
To ten Bridges, where Roads croſs the Canal, at 30 *l.*	300	0	0
To thirty ſmaller Bridges, at 10 *l.* each, —	300	0	0
To thirteen Tunnels for carrying the leſſer Brooks under the Canal, at 8 *l.* - - - - -	104	0	0
Carry over	27,768	6	8

	l.	*s.*	*d.*
Brought over	27,768	6	8
To fixty-eight fmall Ditto, at 2 *l.* 10 *s.* - -	170	0	0
To extraordinary banking and cutting from *Camelon* to *Bonny-Mill*, - - - - -	700	0	0
To an Aqueduct Bridge and banking over *Bonny-Mill Burn*, - - - - -	400	0	0
To extraordinary Work from thence to *Redburn*, -	250	0	0
To an Aqueduct Bridge over *Redburn*, - -	500	0	0
To making a Refervoir at the Canal of Partition, -	800	0	0
To making of other Refervoirs, - - -	200	0	0
To Ground for the large Refervoir, - -	1,000	0	0
To Ground for other Purpofes, - - -	200	0	0
To bringing *Kilfyth* and *Shawend Burns* into the Canal of Partition, - - -	150	0	0
To bringing *Earls-Burn* into *Carron*, - -	50	0	0
To bringing the River *Blain* into *Kelvin*, -	150	0	0
To cutting the Neck on the South Side of *Inchbelly* Bridge, to ftraighten the Run of *Kelvin*, which will improve and drain the Whole Ground for three Miles, and prevent *Kelvin* from overflowing the Banks of the Canal in Time of Flood, -	130	0	0
To making a Harbour and proper Wharf for loading and delivering the Lighters which do not chufe to come to *Clyde*, - - - -	242	0	0
To making paffing Places, Turns, *&c.* at Mr. *Smeaton*'s Allowance, - - - -	600	0	0
To extraordinary banking from *Garfcube*, -	3,000	0	0
To paffing *Logie* Water at *Kirkintilloch*, - -	200	0	0
To unforefeen Accidents, Expence of the Act of Parliament, Utenfils, temporary Damages, and Expence in carrying on the whole Work, *&c. &c.*	8,000	0	0
	£ 44,510	6	8

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An Eſtimate of the Expence of the Canal by the South Track.

	l.	s.	d.
To cutting a Canal 26 Miles in Length, 24 Feet mean Breadth, 5½ Feet mean Depth, a Yard running 14 Yards, a Mile contains 24640 Yards, at 4d. 410l. 13s. 4d. per Mile	10,687	6	8
To 82 Locks at 200l. each - - -	16,400	0	0
To 26 Miles of Track Road at 40l. per Mile	1,040	0	0
To Ground for the Canal 26 Miles long and 24 Yards wide, being in all 203 Acres, at 20l. per Acre - - - -	4,060	0	0
To 15 Bridges where Roads croſs the Canal, at 30l. each - - - - -	450	0	0
To 30 ſmaller Bridges, at 10l. - - -	300	0	0
To 13 Tunnels for carrying leſſer Brooks under the Canal at 8l. each - - -	104	0	0
To 60 ſmall Ditto, at 2l. 10s. - - -	150	0	0
To extra Work in banking and cutting from Camelon to Bonny Mill - - - -	700	0	0
To an aqueduct Bridge, and banking over Bonny Mill Burn - - - - -	400	0	0
To extra Work from thence to Redburn - -	250	0	0
To an aqueduct Bridge over Redburn - -	500	0	0
To extraordinary cutting and banking from Redburn Bridge to Cumbernauld, being two Miles -	1,000	0	0
To extraordinary cutting at the Summit of Cumbernauld Valley betwixt Cumbernauld and Auchenkiln	300	0	0
To extraordinary cutting ¼ of a Mile at Auchenkiln, moſtly Whin Rock - - -	50	0	0
To a Bridge over the Brook at Auchenkiln -	40	0	0
To an aqueduct Bridge and banking over the Logie near Dalſhangie - - -	800	0	0
To cutting the Point of a Rock at Annathill, to ſtraighten the Canal ſo that Boats may be able to turn - - - - - - -	200	0	0
To cutting a Summit near Garnqueen a Quarter of a Mile long and Seven Feet high at a Medium, probably moſtly Rock - - - .	220	0	0
Carry over,	37,651	6	8

	l.	*s.*	*d.*
Brought over	37,651	6	8
To extraordinary cutting at the *Bishop Loch,* and making a Bank on its Side, 1760 Yards in length - - - -	1,192	5	0
To cutting the Summit West of the *Bishop Loch* to near *Blartamuch,* being 2,200 Yards in length, and 18 Feet depth at a Medium, and partly Whin Rock - - - - - -	2,800	0	0
To extraordinary banking and bridging from *Well-house* to *Camlachie* - - -	200	0	0
To an aqueduct Bridge over *Camlachie Burn* -	60	0	0
To turning aside *Camlachie Burn* at the Head of the *Low Green,* or bridging it - -	20	0	0
To an aqueduct Bridge over the *Town Burn* at the *Saw Mill* - - - -	40	0	0
To conducting the Canal below *Glasgow* Bridge, and facing it with Stone from the Bridge to the *Ducat Green,* and forming a Wharf on the Side next the Town - - - - - -	700	0	0
To extraordinary Work in making Passing-Places, flattening sharp Turns, making Wharfs, &c.	700	0	0
To Ground not mentioned for different Purposes	200	0	0
To unforeseen Accidents, Expence of the Act of Parliament, Utensils, Temporary Damages and Expence in carrying on the whole, which from the Uncertainty of the Quality of the Ground, and the longer Time necessary for the Execution, must be at least - - -	12,000	0	0
	£: 55,563	11	8

APPENDIX.

IT may be worth remarking here, that from a Plan publifhed by Mr. *Smeaton* and Mr. *Brindley*, it appears that from *Longbridge* in *Staffordfhire* to *Wilden Ferry* in *Derbyfhire*, there is on an Average a Fall of Five Feet in a Mile: Whereas in the Track propofed in the prefent Canal, even taking it the loweft Way, there is on an Average a Fall of more than Ten Feet in a Mile: Hence a good Reafon for our Lock Dues being higher than theirs.

E S T I M A T E S.

	l.	*s.*	*d.*
The Expence of making the Canal by the North Track as before - - - - -	44,510	6	8
But as it is probable that the Expence (as ufual in fuch hazardous Undertakings) may exceed the firft Eftimate of the Engineers, fuppofe a further Sum of - - - - - - - - -	5,489	13	4
The whole Coft will be £	50,000	0	0

By the moft authentick Accounts (taken up by Lord *Napier Anno* 1762) the Goods carried between the two Seas amounted here to about 8,500 Tons, and more than one merely was Grain.

Suppofe thefe at 10,000 Tons, and fuppofe the Canal 29 Miles, and the Lock Dues Two-pence *per* Ton *per* Mile.

	l.	*s.*	*d.*
The Lock Dues for the whole Line would be	0	4	10
The Freight a Halfpenny *per* Ton *per* Mile	0	1	$2\frac{1}{2}$
Lock Dues and Freight *per* Ton £	0	6	$0\frac{1}{2}$

N. B. The

N. B. The Land-Carriage at present is Twenty Shillings *per* Ton on the Average.

Account with the Adventurers

Thus the Lock Dues upon 10,000 Tons at Two-
pence *per* Ton, would amount to - - 2,416 13 4
Which after deducting Expence of Repairs and
Management, supposed at the least - - 700 0 0
                                                    _____
                                      Remains £ 1,716 13 4

Which will not pay Interest on the Cost at the
Rate of Three and a half *per cent.* yearly.

Account of the public Saving.

The Lock Dues upon 10,000 Tons as before   2416 13 4
Freight of Ditto, at a Halfpenny *per* Mile 604 3 4
                                            _____
Lock-Dues and Freight of 10,000 Tons   3020 16 8
The Saving to the Publick will be immediate, and
near about 7000 *l.* - - - - 6979 3 4
                                            _____
                                    £. 10,000 0

But let it be supposed that the Quantities of Goods passing upon the Canal should increase, (though not in Grain, as the Lands are generally improving in the West Country, and their Demands for Wheat and other Grain from the last are sensibly diminished).

                                                    Tons
Therefore suppose Grain as at present - - 5000
And suppose that the general Commerce should so
increase as to double the estimated Quantity of 5000
Tons, and call it - - - - 10,000
                                                    _____
                            There would then pass 15,000
                                                    _____

Account with Adventurers.

The Lock-Dues upon 15,000 Tons at Two-pence
per Ton would amount to - - - 3625 0 0
Which, after deducting Expences of Repair and
Management, supposed - - - - 750 0 0
                                                    _____
                                      Remains £. 2875 0 0
Which is not Six *per Cent* upon the Cost.

                                                    The

The Lock-Dues upon 15,000 Tons as before . . . 3625 0 0
Freight of Ditto at a Halfpenny *per* Mile . - 906 5 0

Lock-Dues and Freights of 15000 Tons £. 4531 5 0
The Saving to the Country in this Cafe would be
nearly Ten thousand Guineas *per Annum* 10,468 15 0

£. 15000 0 0

But if it could even be further fuppofed, that the general Commerce fhould rife to triple the prefent Eftimates, then the Account will ftand thus:

The Lock-Dues upon 20,000 Tons at Two-pence
per Ton would amount to . - - - 4833 6 8
Which after deducting Expence of Repairs and
Management now fuppofed - - - 833 6 8

Remains £. 4000 0 0
Which is Eight *per Cent.* upon the Coft.

The Lock-Dues upon the 20,000 Tons as before 4833 6 8
Freight of Ditto at an Halfpenny *per* Ton would
amount to - - - - - 1208 6 8

Lock-Dues and Freight of 20,000 Tons £. 6041 13 4
The Saving to the Country in this Cafe would be
nearly Fourteen Thoufand Pounds Sterling *per
Annum* - - - - - - £. 13958 6 8

£. 20,000 0 0

Thus the Returns to the Adventurers (fuppofing all the Difficulties to be forefeen and provided for) are moderate.

The Advantages to the Publick are immediate, and rife gradually (nearly in a threefold Ratio) as the Trade and Commerce of the Country increafe.

F I N I S.